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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/811,834 | 03/16/2001 | Chak Leung | P1283 | 2548 |

7590 10/27/2003
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EXAMINER

LESTER, EVELYN A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2873

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/811,834

Applicant(s)

LEUNG ET AL.

Examiner

Evelyn A. Lester

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-20 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 4 and 7-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

2. The disclosure is objected to because of the following informalities: At page 1, the related U.S. patent application information is missing. Also, the serial number for the co-pending application needs to be updated.

Appropriate correction is required.

3. Claim 1 is objected to because of the following informalities: At lines 3 and 4, "mirror" is in the singular but the "reflective surfaces" is plural. According to the disclosure, the mirrors do not have plural reflective surfaces. Therefore, these elements should match as singular: i.e. mirror with reflective surface.

Claim 14 is objected to because of the following informalities: At line 6, "filed" should be corrected to ---field---.

Claim 17 is objected to because of the following informalities: Claim 17 is currently dependent on itself. However, for examination purposes, the dependency was interpreted to mean claim 16.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Nam (U.S. patent 5,754,330).

Please note in Nam at Figures 4 to 10c and their accompanying text.

Nam discloses the claimed invention of a mirror assembly or mirror array, a moveable non-MEMS mirror with a substantially non-silicon reflective surface (180) and a means for electromechanically moving the mirror to steer an optical beam in two-dimensional space (note at column 11, lines 21-67).

Nam also discloses that the mirror is coupled to a support member (172) and is moveable in relation to the support member.

With respect to claim 6, again note at column 11, lines 21-67.

5. Claim 5 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Huibers et al (U.S. patent 6,337,760 B1).

Note in Huibers et al at Figure 13 and its accompanying text, and the entire Summary.

Huibers et al disclose the claimed invention of a mirror assembly, such as used for optical interconnect switches, a moveable mirror having substantially non-silicon reflective surface (432) having a flexible wire with serpentine shape or an S-shaped flexures (434), which are attached to support members or posts (436).

Allowable Subject Matter

6. Claims 4 and 7-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 14-20 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to teach or fairly show the claimed subject matter of a mirror assembly having the combination of claimed elements, including details directed to flexible wire, as recited in claims 4 and 7; and at least one coil and associated magnet, as recited in claims 9, 10, 12 and 13. With respect to claims 14-20, please note the reasons for allowance noted in paper #11.

Response to Arguments

9. Applicant's arguments with respect to claims 1, 3, 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wang (U.S. patent 6,366,715 B1) is directed to free-space optical switch.

Wendland, Jr. (U.S. patent 6,381,387) is directed to an optical router.

Wood et al (U.S. patent 6,396,975 B1), Dhuler et al (U.S. patent 6,445,842 B1), and Hill (U.S. patent 6,490,382 B1) are directed to a MEMS optical cross-connect switch.

Little et al (U.S. patent 6,519,074 B1) is directed to electrostatically actuated optical elements using entropic materials (i.e. non-silicon materials).

Jin et al (U.S. patent publication 2002/0071166 A1) is directed to magnetically actuated MEMS device.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn A. Lester whose telephone number is (703) 308-4943. The examiner can normally be reached on M- F, subject to I-flex schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone

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number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Evelyn A. Lester
Primary Examiner
Art Unit 2873